STATUS OF CERTAIN PIERS ALONG THE SAN FRANCISCO WATERFRONT

FEBRUARY 1991

SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION

Status of Certain Piers
Along the San Francisco Waterfront

February 1991

San Francisco Bay Conservation and Development Commission
30 Van Ness Avenue, Suite 2011, San Francisco, CA 94102

TABLE OF CONTENTS

FOREWARD

The San Francisco Waterfront Special Area Plan (SAP), adopted as part of the San Francisco Bay Plan in April 1975, identifies appropriate locations for new and replacement fill, indicates types of uses that are appropriate, and establishes criteria for public access for the San Francisco waterfront. No survey of the condition of the piers was available when the SAP was prepared so the SAP assumes that the piers are structurally stable and could be redeveloped for other uses should they not be needed for maritime purposes.

Even though many of the piers have water underneath the deck and around the supporting pilings, the piers are treated as though they are within the Commission's "shoreline band" type of jurisdiction, because they were built prior to September 17, 1965 when the Commission was created. However, according to advice received from the Attorney General, if substantial work on the pilings or decks is needed and the purpose of that work involves extending the life of the pier or changing the uses on top of the pier, then that work is treated as within the Commission's "bay" jurisdiction such that any fill must be consistent with the water-oriented use and other limitations of Section 66605 of the McAteer-Petris Act and the fill policies of the Bay Plan.

The SAP called for the preparation of even more specific policies for that part of the northern waterfront between Piers 9 and 24. These were prepared and adopted in June 1980 as the San Francisco Waterfront Total Design Plan (TDP). The TDP identifies more precisely the configuration of any replacement

fill discussed in the SAP and also discusses appropriate uses on certain piers. In some locations the TDP specifies that non-water-oriented uses (e.g., offices) as well as water-oriented uses (e.g., commercial recreation) are appropriate. However, the TDP, a part of the SAP, was also predicated on the assumption that no new or replacement fill would be needed in order to place non-water-oriented uses on those piers where such uses appeared appropriate.

This report analyzes the structural condition of certain San Francisco waterfront piers and concludes that the surveyed piers on the northern waterfront will likely need substantial reconstruction or modification if they are to be converted to new uses. From an engineering perspective, it is highly likely that the reconstruction process required to modify or reconstruct the piers will involve fill. As mentioned above, the Commission cannot authorize fill for non-water-oriented uses and the SAP and TDP are subject to that limitation. Some developers have been confused by the TDP's inclusion of non-water-oriented uses for certain piers and have expressed a belief that the Commission can authorize fill at those piers for those non-water-oriented uses. It is important that this confusion be avoided.

Since the preparation of the SAP, the TDP and the survey discussed in this report, the citizens of San Francisco have enacted Proposition H which calls for further waterfront planning. That waterfront planning may also lead to requests for changes to the SAP and the TDP. The information in this report should aid the City and County of San Francisco and the Port of San Francisco in undertaking that planning. It is also intended to inform developers and others interested in San Francisco waterfront projects about the surveyed

piers and the fill restrictions in the McAteer-Petris Act and the Bay Plan. Of particular importance is that fill is limited to water-oriented uses, except in very limited situations involving minor fills for public access or shoreline improvement or for the health, safety and welfare of the entire region. The latter two criteria are unlikely to be relevant to the pier situation along the northern waterfront.

EXECUTIVE SUMMARY

The Commission controls fill and dredging in the Bay and work within the 100-foot shoreline band pursuant to the provisions of the McAteer-Petris Act and the San Francisco Bay Plan, including any special area plans that have been adopted as part of the Bay Plan. The San Francisco Waterfront Special Area Plan (SAP) was adopted as part of the Bay Plan in April of 1975. It called for the preparation of an even more detailed set of policies for that part of the San Francisco waterfront between Piers 9 and 24. In response, the San Francisco Waterfront Total Design Plan (TDP) was adopted on June of 1980. At the time these documents were prepared, no survey of the structural condition of the San Francisco waterfront piers had been done. So the two documents are predicated on the assumption that the pile-supported piers discussed were structurally sound and could be rehabilitated without fill for other uses or if any fill was needed, it would be limited to water-oriented uses.

This report indicates that such an assumption is unwarranted because the surveyed pile-supported piers are not likely to meet current standards in the San Francisco Building Code, particularly with regard to minimizing risk in the event of an earthquake. Thus, it appears more likely than not that any change of use of the surveyed pile-supported piers will involve structural work underneath piers, such as the placement of new pilings, new casings on existing pilings, additional members to provide more lateral stability and

similar modifications. It should be noted that not all piers could be surveyed and that some piers, such as Pier 45, involve an earthen core which may be sufficiently stable to support new uses without the need of any fill.

The piers surveyed in this report include: Piers 1, 1-1/2, 3, 5, 24, 33, 35, 45. Other piers were not surveyed specifically but were, for the most part, built during the same time period as the surveyed piers and probably according to similar designs.

The surveyed piers, as well as most of the non-surveyed piers, predate September 17, 1965 when the Commission first came into being. Such pre-existing structures have been treated as within the "shoreline band" type of jurisdiction unless they require reconstruction. According to the advice of the Attorney General, if substantial work on a pier structure involves removing and replacing decks or placing new pilings or other foundation type work, the Commission cannot not treat any such substantial work as within the "shoreline band". Instead, it must be treated as work in the "bay" and, thus, any fill must meet the water-oriented use restriction of the McAteer-Petris Act and the Bay Plan as well as the other fill criteria in those documents.

Because the TDP indicates that certain piers may be suitable for non-water-oriented uses, such as offices, some developers have been confused as to whether the Commission can allow structural work on the piers for the purpose of installing the non-water-oriented use. This report makes it clear that the Commission may not authorize such fill.

BACKGROUND

Purpose

This report has been prepared to advise the Port of San Francisco, the City and County of San Francisco, the Commission, and interested parties of the condition of those piers along the San Francisco Waterfront where development or redevelopment may occur and where the Port of San Francisco is required under Proposition H, passed by San Francisco voters in November 1990, to prepare a waterfront plan. The report addresses perceived conflicts between San Francisco Waterfront Special Area Plan policies which would allow non-water-oriented uses, on certain piers on the northern waterfront and the McAteer-Petris Act prohibition of Bay fill for non-water-oriented purposes. The report provides information about certain surveyed piers along the waterfront.

Fill Limited to Water-Oriented Uses

The McAteer-Petris Act allows the Commission to authorize Bay fill only for uses that are: (1) necessary for the health, safety, and welfare of the public in the entire Bay Area; (2) water-oriented uses; and (3) minor amounts of fill for increasing public access to the Bay, or improving shoreline appearance. "Fill" is defined in the McAteer-Petris Act as any substance or material placed in any area subject to tidal action, including pilings, structures placed on pilings or cantilevered over the Bay, such as piers and wharves, or any structure moored in the Bay for extended periods of time, such as floating docks and houseboats.

Changes in use and construction on piers built before September 17, 1965, the date the Commission was established, are considered to be within the Commission's "shoreline band" jurisdiction, and thus the McAteer-Petris Act "bay" fill restriction do not apply. However, according to the Commission's policies and the advice of the Attorney General (see attached Exhibit A), if modifications are necessary to the supporting pilings, decks, or cantilevered structures on pre-existing piers, such work is considered to be in the Commission's "bay" jurisdiction. As a result, uses on new or replacement pilings, platforms, and similar fill must be limited to: (1) uses which are necessary for the health, safety and welfare of the public in the entire Bay Area; (2) water-oriented uses or (3) minor fills to improve public access or shoreline appearance.

Several piers in the Bay on the San Francisco waterfront now support buildings used for non-water-oriented purposes, e.g. offices. In addition, other piers have been considered for development for non-water-oriented uses. However, many of these piers will require major reconstruction to meet current fire, seismic, and structural safety requirements. Under the McAteer-Petris Act, the reconstruction of these piers for non-water-oriented uses could not be allowed, unless the fill can be classified either necessary for the health, safety and welfare of the public in the entire Bay Area or as minor to improve shoreline appearance or for providing new public access to the Bay.

The San Francisco Special Area Plan

In 1975, the Commission adopted the SAP to apply the Bay Plan policies more specifically to the waterfront of San Francisco, and particularly to clarify the kinds of non-maritime water-oriented uses projects the Commission

would allow on new or replacement fill along the northern waterfront. The SAP, was prepared over a three-year period in conjunction with the City and County of San Francisco, the Port of San Francisco, and a waterfront advisory committee broadly composed of many civic, labor, neighborhood, and environmental organizations. The waterfront advisory committee studied the San Francisco waterfront at great length and depth. The SAP resulting therefrom was finally adopted by the Commission, the San Francisco Board of Supervisors and the Port after much debate and compromise as a consensus document.

The SAP has three major premises: (1) those areas along the waterfront that are needed for maritime purposes should be retained for such purposes; (2) on those piers that are not needed for maritime purposes and do require fill for redevelopment, only water-oriented uses may occur; and (3) on those piers that are not needed for maritime purposes and do not require fill for redevelopment, any use may occur so long as maximum feasible public access is provided consistent with the project.

The SAP water-oriented use that may occur on use policies are confined to the specific kinds of new and replacement. These uses include port, water-related recreation, Bay-oriented commercial recreation, Bay-oriented public assembly, and minor fills for public access and shoreline appearance. The SAP specifically states that no residential or office uses can be permitted on new or replacement fill. The SAP also describes specific uses to be allowed on new or replacement fill on virtually a pier-by-pier basis. Of particular relevance to this discussion are the following policy statements:

1. Permitted new or replacement fill use at Pier 45 are public access, boat slips, and maritime (page 17);

2. Permitted new or replacement fill uses at Pier 35 are for passenger terminal, maritime, or public access purposes, and, the existing passenger terminal should be renovated as a modern, functional, and attractive terminal with associated commercial recreation uses such as a restaurant and small shops (pages 20 and 21);

3. Permitted new or replacement fill uses in the area between and including Piers 7 and 24 are public recreation/open space/public access, commercial recreation, marina, and maritime. New or replacement fill from Piers 7 through 24 is prohibited unless a total design plan is adopted to establish more specific policies for development in that area (see discussion below). A total design plan must require at least 50 percent of a pier reconstructed for Bay-oriented commercial recreation or Bay-oriented public assembly, at platform level, to be devoted to public access and recreation uses. The total design plan for this area also must preclude housing, offices, department stores, heliports, or STOL ports on new or replacement fill. Small scale offices, studios, and housing can be permitted by the total design plan on existing piers, excluding the BART platform, <u>when no fill is needed</u> (emphasis added). The SAP acknowledges that because of seismic safety concerns, many or all of the piers in this area will likely require substantial reconstruction to support significant development (pages 21 to 24);

4. Residential and small scale office uses are allowed on the existing Piers 26, 28, 30, 32, 46a, and 46b as an extension of the development of adjacent inland areas, but specifically not those piers requiring new fill or

replacement piers. The SAP notes that these piers are structurally sound and that no new fill is expected (page 26).

The Total Design Plan

Because the authors of the SAP were concerned about just how the piers not needed for maritime purposes might be redeveloped, they wanted even more specific guidance about how this important waterfront would change. Therefore, the SAP required total design plans for certain portions of the waterfront, particularly for the area between and including Piers 7 and 24. To comply with this requirement, the City and County of San Francisco, in conjunction with the Commission and the Port and with the assistance of the Northeast Waterfront Advisory Committee, prepared the first and to date only San Francisco Waterfront Total Design Plan; Pier 7 through 24 (TDP) as a more specific application of the Bay Plan and SAP policies for the Piers 7 - 24 area. This comprehensive and detailed plan was adopted by the Commission, the Port, and San Francisco in 1980. The TDP was incorporated into the City and County's Northeast Waterfront Plan. The TDP also contains certain provisions that bear on this report.

1. The TDP permits the mooring of office-oriented historic ships at Pier 3 and the mooring of commercial recreation-related historic ships at Pier 24 (pages 5 and 8);

2. The TDP permits a new, two-story shed-like structure to be constructed on Pier 3 for an office community facility use, with continuous peripheral public access along the water and a one-half acre plaza at the eastern end of the pier for public access use (pages 7 and 8);

3. The TDP states that the bulkhead building on Pier 1-1/2 should be rehabilitated and restored to its historical appearance for use as a museum and/or offices (page 8);

4. The TDP allows up to 15,000 square feet of Pier 1 to be devoted to office/commercial recreation use on an interim basis, and up to 160,000 square feet of Pier 1 on a long term basis for office use, with some commercial recreation and other uses associated with the redevelopment of the Ferry Building (pages 8 and 9);

5. In the Ferry Building, the TDP permits predominately commercial recreation uses on the first floor, predominately office uses on the second floor, and the existing restaurant on the third floor (page 9);

6. The TDP envisions the main portion of the Agricultural Building to be restored for office use and perhaps a visitor center (page 10);

7. The TDP permits up to 30,000 square feet of office use and a 5,000 square-foot restaurant in the existing bulkhead building between Piers 24 and 26 (page 11); and

8. Of particular importance, the TDP expected Piers 3, 1-1/2, and 1, the Ferry and Agricultural Buildings, and the Pier 24-26 bulkhead building to be retained because of their relatively sound condition (pages 14 and 15). Thus, the the office uses on these pile-supported structures were considered acceptable under the Bay Plan and McAteer-Petris Act because new or replacement fill would not be necessary to continue such uses or convert other water-oriented uses to office use.

PIER ANALYSIS

A reconnaissance analysis of the San Francisco piers was undertaken because the permissible, non-water-oriented uses on some of the piers covered by the SAP and TDP are predicated on the piers being able to support the indicated uses without any new or replacement fill. However, since the adoption of the SAP and TDP, whenever a proposal is made for one of these piers, the detailed engineering analysis indicated that the underlying structure either needs repairs or bracing to meet seismic requirements, which involves Bay fill.

The staff researched the condition of the relevant piers using several sources. First, the staff requested the Port of San Francisco to provide an inventory of the various piers and a description of their present conditions. Second, the staff reviewed the applicable codes under which the piers were built. Third, the staff reviewed the preliminary engineering findings developed by sponsors of several recent development proposals on some of the piers. Fourth, the staff investigated the Commission's files to review the Engineering Criteria Review Board's analyses of several proposed pier projects.

Port Inventory

The Port provided specific information on each of the piers reviewed as part of this study. This information includes the following: (1) design and construction dates and history of use from construction to date; (2) type and

condition of each component of the pier, such as deck, piles, and support members; (3) record of past maintenance performed on the pier; (4) amount and type of loads the pier was designed for; (5) modification of the amount or type of loads; (6) name and date of any reports that describe the soil conditions, depth of bedrock or other geological information that affects the foundation of the pier; (7) name and date of any study performed by private engineers; and (8) location of all plans, reports, and studies referred to in the above inventory. Appendix B summarizes this information in "fact sheets" for each of the piers.

Applicable Codes

Most of the piers designed for use along the waterfront in the San Francisco Bay use one, or a combination, of the following codes: (1) the current Uniform Building Code (UBC), (2) the American Association of State Highway and Transportation Officials (AASHTO) Bridge Code, or (3) the Code adopted by the local government patterned after the UBC and which usually exceeds the standards of the UBC.

1. The Uniform Building Code. Most of the earthquake regulations, including the formula for the total lateral force or shear at the base of the structure, were revised considerably for the 1976 edition of the UBC. The regulations, including the formula for lateral force, then remained appreciably the same until 1988. In 1988, mostly because of the recent Mexico City and Armenian earthquakes, the regulations were again significantly revised, which resulted in the design lateral force being increased appreciably. A review of the relevant UBC formula is provided in Appendix C.

2. The Association of American State Highway and Transportation Officials (AASHTO) Code. The AASHTO Code for bridges is sometimes used for piers because piers act like bridges structurally. Usually the AASHTO and UBC codes are examined together and code with the highest value is used. Specifics about this code can be found in Appendix D.

3. Local Codes. Occasionally a local government will adopt its own code. The code is unique to the local government's location and situation and, of course, varies from one government to another. The code is based on the UBC; it may be very similar, but is usually of a higher standard than the UBC. Thirteen pier projects, reviewed by the Engineering Criteria Review Board, have been examined to determine which codes were used and what values for lateral resistance resulted. In the design of those projects, both the UBC and AASHTO codes were used but not local codes.

Information Derived from New Pier Proposals

The staff reviewed preliminary engineering surveys prepared as part of project design for several new proposals for the piers along the San Francisco waterfront. For example: (a) Piers 1, 1-1/2, 3, and 5; and (b) Pier Associates studied Piers 1, 1-1/2, 3, and 5 and in their June 10, 1985 development proposal concluded:

1. The concrete deck and girders of Piers 1-1/2, and 3 are badly damaged due to a combination effect of excess lateral loading and of environmental attack and should be removed and the existing piles repaired for the new pier; and

2. According to the 1982 Uniform Building Code, the lateral seismic forces with the new building weight are significant. Therefore, the existing pile system is not sufficiently strong to resist the forces unless the piles are laterally supported. Therefore, a new system of batter piles is recommended for the new pier.

3. Johnson and Neilsen Associates studied Piers 33 and 35 and in their July 1989 Study entitled "Structural Review of Piers 33 and 35" concluded:

(a) Due to the absence of a lateral force resisting system in both Piers 33 and 35, additional seismic pile groups should be installed. and,

(b) Roughly 25 percent of the damaged piles in Pier 35 have sustained enough structural damage that they would either need to be replaced or require the addition of a structural sleeve encasing the upper portion of the pile from the tidal zone up to the deck.

(c) Peter Culley, Structural Engineers for Continental Development, Circa 1983 recommended the addition of batter piles for office development for Pier 1.

4. The Redevelopment Agency consultants in their study of Pier 40, concluded:

(a) Additional batter piles would be needed for the development of Pier 40; and

(b) It can be anticipated that similar requirements would be needed in development of other piers.

Projects Reviewed by the Engineering Criteria Review Board

From 1974 through 1986, the Engineering Criteria Review Board reviewed thirteen pier projects. For the purpose of determining what codes were used

and what values of lateral load design resulted, these projects have been examined. The values of the lateral design load required by the respective codes used in the ECRB review of those projects, which are shown in Appendix E, varies between 15 and 20 percent of (Dead Load + 100 PSI Live Load). The value of the lateral design load was again increased in the 1988 UBC; therefore the amount of lateral resistance required by today's code may be as high as 25 percent of the dead load plus 10 percent of the live load.

Findings Regarding Lateral Resistance to Earthquake Forces

The information derived by this pier inventory and analysis indicates that most of the piers which are the subject of this report were designed between 1910 and 1920, relying on codes of much less rigorous standards than those now in effect. Vertical piles were used in the construction of the piers, but these piles were not designed to resist lateral loads. There is no evidence in the design of these structures of: (1) a batter pile system or a bracing system being used to resist lateral forces; (2) some lateral resistance which automatically may be built into a system by means of the rigid connection that exists between the piles, pile caps, and the deck; (3) the use of diagonal bracing between piles; and (4) bending resistance which develops in the vertical piles where the bottom portion of the piles are held rigid in rather stiff Bay mud. In addition, the vertical design load requirements were most likely understated when comparing them with today's building codes or experience from the Loma Prieta earthquake. The design of the piers would comply with today's code for vertical loading, but retrofitting to the foundation of the piers would most likely be required to meet lateral loading

design standards. The Port of San Francisco's engineers have verified that none of these piers had been designed with any lateral resistance against earthquake loading. In conclusion, none of the surveyed piers have been designed to adequately resist the forces placed on the structure by an large earthquakes.

Furthermore, the staff reviewed what support designs would likely be needed to convert the piers to residential or offices uses in light of today's seismic standards and building codes. Additional lateral resistance to earthquake forces and some additional resistance to vertical loading would be needed. If batter piles are used, an additional pile for every existing pile may be required. However, even battered piles in the Port of Oakland failed during the Loma Prieta earthquake. Under current design standards, vertical piles designed to resist expected earthquake loads would likely have much larger diameters than the existing piles. If the piers are renovated to withstand lateral and vertical forces pursuant to today's code, the area of piles may increase by two to ten times.

Implications

As alluded to earlier, the Attorney General (see Exhibit A) has indicated to the Commission that proposed development on a pier that does not involve any additional coverage of Bay waters and that does not involve any work on the pier itself or its substructure may be treated as work in the "shoreline band." Where the proposed developement does involve work in the pier itself or its substructure, the physical extent, nature, and purpose of the work would determine how the work should be considered by the Commission. For

example, routine repairs that do not change the essential utility or nature of the pier could be permitted without calling into question whether the use to which the pier is put is water-oriented in nature.

However, anything beyond such routine repairs would create what is essentially a "new" structure. The uses and life expectancy would be significantly different from what existed prior to the work. New structures would need to be evaluated for their water-oriented uses.

CONCLUSIONS

The staff's review and analysis of the information derived from this study, in light of the policies of the McAteer-Petris Act, San Francisco Bay Plan, and Attorney General's advice, leads to the following conclusions:

1. The piers addressed in this report (Piers 1, 1-1/2, 3, 5, 24, 33, 35, 40, and 45) have not been designed for lateral resistance to earthquake forces;

2. To make these piers meet the requirements of present codes, especially when a change in use is proposed on a pier that increases the occupancy of the pier appreciably where significant human lives would be at stake, the lateral resistance factor must be incorporated into their design;

3. The amount of work required to build in the lateral resistance could not be classified as a routine repair project, but would likely be subject to a determination as to whether the purpose of the work is for a water-oriented use.

APPENDIX A

ATTORNEY GENERAL'S INFORMAL OPINION

JOHN K. VAN DE KAMP
Attorney General

State of California
DEPARTMENT OF JUSTICE

350 McALLISTER STREET, ROOM 6000
SAN FRANCISCO 94102
(415) 557-2544

(415) 557-3650

October 8, 1986

Alan R. Pendleton
Executive Director
San Francisco Bay Conservation
and Development Commission
30 Van Ness Avenue
San Francisco, California 94102-6080

Dear Mr. Pendleton:

Request for Informal Opinion Concerning
BCDC Jurisdiction Over Piers That Predate
the Establishment of BCDC

You have requested an informal letter of advice regarding the scope of BCDC permit review when the work requiring a permit involves piers that predate the establishment of BCDC in 1965. In essence, you wish to identify the circumstances in which the uses supported by the pier must be evaluated for whether they are "water-oriented" within the meaning of Government Code section 66605.[1] We understand that these questions are prompted by certain development proposals for piers held by the Port of San Francisco under a grant from the State of California.[2] The specific questions raised are as follows:

1. The Commission has regarded applications for development that will take place upon piers that predate the McAteer-Petris Act as coming within the Commission's "shoreline band" jurisdiction (see §§ 66610, subd. (b), 66611, 66632.4), as opposed to its "bay" jurisdiction (see §§ 66605, 66610). Is this correct?

---

1. All section references are to the Government Code unless otherwise specified.

2. We assume that any proposal by the holder of a legislative grant of tide and submerged lands will also be evaluated by the Commission for consistency with the terms and conditions of the applicant's granting statute. This should be done in furtherance of the Commission's responsibility to assure that the applicant "has such valid title to the properties in question that he may fill them in the manner and for the uses to be approved." (§ 66605, subd. (g).)

2. What is the scope of Commission review if such proposed development also includes:

   (a) Minor modifications to the pier deck itself or to the pilings or cantilever construction supporting the pier;

   (b) The removal and replacement of all or a substantial portion of the pier deck; or

   (c) Substantial work to replace, stabilize, or reinforce the existing pilings that support the pier?

3. If you conclude in any of the above situations that the uses supported by the pier must be water-oriented, could some non-water-oriented uses be approved if they were clearly incidental and secondary, and provided revenue that made possible the development of the pier for water-oriented uses?

In summary, our conclusions are as follows:

1. Proposed development upon a pier that does not involve any additional coverage of Bay waters and that does not involve any work on the pier itself or its substructure may be treated as coming within the Commission's shoreline band jurisdiction; that is, the uses supported by the pier need not be water-oriented as long as the area has not been designated by the Commission for water-oriented priority land uses pursuant to section 66611.

2. Where the proposed development does involve work on the pier itself or its substructure, the scope of the Commission's permit review varies with the physical extent, nature, and purpose of the work.

3. "Incidental" and "secondary" uses are permissible only where they may be fairly characterized as "water-oriented"; the McAteer-Petris Act does not sanction Bay fill to support uses whose only relationship to a water-oriented use is one of providing supporting revenue.

Discussion

The McAteer-Petris Act (the Act) provides that any person "wishing to place fill, to extract materials, or to make any substantial change in use of any water, land or structure" must obtain a permit from the Commission if such development is

"within the area of the commission's jurisdiction". (§ 66632.) The Commission's "jurisdiction" consists primarily of two types: (1) jurisdiction over a 100-foot band abutting the Bay shoreline, where, unless the land has been designated for water-oriented priority land uses, the Commission may deny an application "only on the grounds that the project fails to provide maximum feasible public access, consistent with the proposed project, to the bay and its shoreline" ("shoreline band" jurisdiction); and (2) jurisdiction over the Bay itself ("bay" jurisdiction) where the Commission applies stricter criteria in reviewing the proposed development, among them the requirement that the project be "water-oriented" and that there be "no alternative upland location . . . available for such purpose". (See §§ 66605, 66610, 66611, 66632, 66632.4.) Thus, a permit application for "fill", as defined in subdivision (a) of section 66632, will be evaluated differently, depending upon the location of the proposed work. If the fill is to be located on upland within the shoreline band, it need not be for a water-oriented purpose unless that area has been designated for water-oriented priority land uses pursuant to section 66611.[3/] If, however, the fill is to be located in the Bay, the water-oriented requirement applies.

Your questions deal with a hybrid situation: pile-supported piers that predate the Act but which nonetheless extend over lands that are still washed by Bay waters. What is the scope of BCDC's permit review regarding such piers? Should this preexisting "fill" be treated as the Commission treats preexisting upland for purposes of permit review? Or, considering the "vertical" element of BCDC jurisdiction, should development involving these piers be treated as occurring "in" the Bay? (See section 10135 of the Commission's regulations (14 Cal.Admin.Code § 10135), which treats as fill in the Bay structures that are not physically placed in the Bay but are cantilevered over it.)

Concerning development on a pre-Act pier that does not involve any work on the pier itself or its underlying substructure, we think the Commission is justified in treating such projects in the same way that it treats projects on solid fill that was placed prior to the Act and lies adjacent to the Bay within the shoreline band. While there may be room for differing interpretations of the Act on this point, the longstanding interpretation of both this Office and the Commission, either

---

3. The only exception is where the present "upland" was itself created pursuant to a Commission permit, in which case the Commission's bay jurisdiction would apply. (See 14 Cal.Admin.Code § 10132(b).)

expressly or by implication, is that such projects are within the Commission's shoreline band jurisdiction, not its bay jurisdiction. (See 53 Ops.Cal.Atty.Gen. 285 (1970); 14 Cal.Admin.Code § 10122(b)(3) (effective April 19, 1973).) The courts have continually ruled that such administrative construction is entitled to great weight (e.g., Mooney v. Pickett (1971) 4 Cal.3d 669, 681; DiGiorgio Fruit Corp. v. Dept. of Employment (1961) 56 Cal.2d 54, 61-62), and we doubt that the courts would depart from such a longstanding construction in this instance.The Commission has reached a different conclusion concerning projects that involve the complete removal and replacement of either a pier's decking or its supporting pilings. There has been a consistent pattern of construction here treating such work as new fill. (See BCDC, San Francisco Bay Plan (July 1979, as amended), pp. 36-37 (treating replacement of a pier, including only the pier decking, as new fill in the Bay); 53 Ops.Cal.Atty.Gen. 285 (1970) (same); see also 14 Cal.Admin.Code § 10122(a)(9).) This treatment is accorded in situations where the existing pier has become obsolete through physical deterioration or changes in shipping technology, or where the pier was destroyed involuntarily by fire, earthquake, or other disaster. (Bay Plan, supra.) Our 1970 opinion viewed extraction of "materials" from the Bay, including removal of a pier, as an act that enlarged the Bay, and regarded this act as separate from the subsequent act of placing new materials in the Bay in the form of a replacement pier. (53 Ops.Cal.Atty.Gen. 285, 289 (1970).) We therefore concluded that the replacement pier was "further filling" of the Bay that had to be "wateroriented" within the meaning of section 66605. (Id., at pp. 285290.)

We remain convinced that this conclusion is sound and that complete replacement of a pier subjects the project to the requirement that the uses supported by the replacement pier be water-oriented. Your remaining examples relate to situations involving something short of complete replacement.

Turning first to the opposite extreme from complete replacement, that is, replacement of a single piece of decking or a single piling, we do not believe that a court would conclude that such a minor bit of work would subject the uses supported by a pre-Act pier to review for whether they were water-oriented, even though one could argue that such minor repairs are "further filling" of the Bay within the meaning of our 1970 opinion, and so subject to the strict criteria set forth in section 66605. On pre-Act piers supporting non-water-oriented uses, such an interpretation would mean that a permit for such minor repairs could not issue in the absence of wholesale changes in pier uses that either predated the Act or that had been permitted by the Commission in the exercise of its more limited shoreline band jurisdiction.

The owner of a pier that supported non-water-oriented uses could avoid such a result only by foregoing the most routine and innocuous of pier repairs, thus furthering the premature deterioration of the pier and possibly truncating the anticipated economic amortization period for structures and improvements resting on the pier. Substantial and abrupt economic dislocations could be caused by such an interpretation, regardless of which course the owner chose. It seems highly unlikely that the Legislature intended that the type of de minimis repairs in our example should trigger such profound and sudden changes in existing land uses. Such an interpretation does not seem necessary to preserve the overriding purposes of the McAteer-Petris Act (see §§ 66600, 66601, 66602, 66603, 66604, 66605), and absent a clear expression of legislative intent in support of such a result, we doubt that a court would so interpret the requirements of the Act. "Statutes must be given a reasonable and common sense construction in accordance with the apparent purpose and intention of the lawmakers -- one that is practical rather than technical, and that will lead to a wise policy rather than to mischief or absurdity." (People v. Aston (1985) 39 Cal.3d 481, 492.)

We of course recognize that even such "minor repairs" require a BCDC permit. (§ 66632, subd. (f); compare Pub. Resources Code, § 29508, subd. (b), expressly exempting repairs from the BCDC permit requirement imposed by the Suisun Marsh Preservation Act.) De minimis repairs such as those in the example would still be subject to certain other criteria for permit issuance -- for instance, the requirement that such repairs be conducted using materials and methods that would minimize any possible harm to water quality or public safety (§ 66605, subds. (d), (e)); they just would not be treated as "bay fill" for purposes of calling into play a "water-oriented" assessment of the entire pier. The remaining question is how to treat the range of work involving a pier deck or substructure that falls between the extremes of complete replacement and the type of minor repairs just discussed. For instance, what if the decking or pilings are substantially but not entirely replaced? Commission staff has construed this latter situation as coming within the rationale of our 1970 opinion, thus triggering an assessment of whether the uses on the subject pier are water-oriented. We agree with this conclusion, but not based upon any test that looks solely to whether, at some instant in the construction process, piers are extracted from the Bay bottom or Bay waters are exposed by the removal of decking. Such a test breaks down at some point, as is evident from the preceding discussion of minor repairs involving individual piles and small amounts of decking.

Further, it may be subject to evasion by contrived and ingenious construction methods that leave preexisting decking or pilings in place while nonetheless resulting in what amounts to a brand new pier.

We think a more serviceable line of division is indicated by the language of the Act itself, when it provides for the issuance of permits by the Executive Director, rather than by the Commission itself, for "minor repairs" (§ 66632, subd. (f)). The Commission's regulations in turn suggest that "minor repairs" must be "routine" in nature. (See 14 Cal.Admin.Code § 10122(a)(1), (9).) Such routine repairs would be those that are necessary to keep pace with the ordinary wear and tear suffered by an existing structure, yet are not such as to change the essential utility of the structure or to allow the structure -- through periodic repetitions of such work -- to be perpetuated indefinitely. As noted earlier, the Bay Plan contemplates that existing piers will become obsolete through physical deterioration or technological obsolescence, and requires that replacement piers be treated as new Bay fill. (See Bay Plan, supra, at pp. 36-37.) Anything beyond such routine repairs tends toward creation of what is essentially a "new" structure, in that the structure is, at the very least, one that is significantly different from what existed prior to the work in terms of its utility or life expectancy or the time period that will be necessary to amortize its overall cost. At this point, such a pier becomes much closer to the replacement piers discussed in our 1970 opinion than to the minor repairs discussed in our earlier hypothetical. Accordingly, any such work on a pier should be treated as "further filling" of the Bay within the meaning of section 66605, and must be assessed for the water-oriented nature of the uses supported by the pier.

Our conclusion as to the workability of this standard is fortified by the fact that this standard of permissible "repair", versus prohibited change, expansion, or perpetuation, has been sanctioned by the courts where adopted by local zoning bodies with reference to nonconforming uses. (See Hagman, California Zoning Practice (Cont.Ed.Bar 1969) § 9.15; Witkin, Summary of California Law (8th ed. 1974) Constitutional Law, § 478, p. 3775.) Indeed, the Legislature may well have had some such line of division in mind when it accorded the Executive Director the power to issue permits for "minor repairs", but reserved to the Commission itself the power to consider permit applications for anything beyond that.

In addition to the general criteria mentioned above regarding what is a "minor repair" and what is not, the Commission may wish to consider the following factors in evaluating any particular project involving a pier or its substructure:

a. What is the physical extent of the work? Does it extend to all or substantial portions of the pier, or is it confined to some lesser area? If the former, that is some evidence that the work is not in the nature of routine repairs.

b. What is the nature of the work? From an engineering standpoint, will the pier have different capabilities after the work than it did before? If so, that suggests that something more than routine repairs are involved.

c. Is the work being undertaken in conjunction with a proposed change in the type of use that will be supported by the pier? If so, it may be that the work is dictated not by considerations of prudent maintenance but by the necessity for significant structural changes to support the new use.

Applying these factors to the three types of situations set forth in your second question, we conclude that the "removal and replacement of all or a substantial portion of the pier deck" would subject the uses supported by the pier to evaluation for whether they were water-oriented. This situation closely approaches that in our 1970 opinion and involves work that goes beyond routine repair. Regarding the other two situations mentioned, that involving "minor modifications" to the deck, pilings, or supporting cantilever construction, and that involving "substantial work to replace, stabilize, or reinforce the existing pilings," we cannot give an answer in the abstract. You should review particular proposals in light of the considerations discussed above.

Your final question asks whether non-water-oriented uses that are "incidental" or "secondary" may be permitted in certain limited circumstances even where, for the reasons discussed above, the proposed Bay fill must be assessed for whether it serves water-oriented uses. We understand that the question is generated primarily by some recent proposals under consideration by the Port of San Francisco whereby office space would be built on piers or where existing office space on piers would either be maintained or expanded. In a few cases, co-located office space has been viewed by the Port as the most practicable means of financing pier uses and structures that are clearly water-oriented.

The criteria set forth in section 66605 for permitting Bay fill are extremely strict. With limited exceptions that do not appear to be applicable here,[4/] not only must the fill be for "water-oriented" uses (subd. (a)), fill should be authorized "only when no alternative upland location is available for such purpose" (subd. (b)). This office has strictly construed these criteria. In our 1970 opinion, for instance, we rejected the concept that the Act could be read as permitting non-water-oriented uses on piers that merely replaced older piers and resulted in no net increase in Bay fill. (53 Ops.Cal.Atty.Gen. 285 (1970).)

We feel constrained to reach a similar conclusion here. Although policy arguments might be made in support of allowing co-location of non-water-oriented uses with water-oriented uses in order to finance the latter, interpreting the Act to allow this would, in our view, unduly stretch the statutory language. The Act clearly states that fill in the Bay must be for uses that are water-oriented and for purposes for which there is no alternative upland location. It contains absolutely no hint that a purely fiscal nexus between a permitted use and a non-permitted use is sufficient to bring the latter within the range of uses for which Bay fill is permissible. To construe such uses as "water-oriented" based merely upon such an economic interrelationship would be to alter the terms of the Act in the guise of interpretation. Accordingly, the Commission may not sanction general office space in the Bay, even in situations where it may be perceived as a necessary financing tool for the promotion of uses that are clearly water-oriented.

This is not to say that uses that are interrelated with the water-oriented use on a pier from an operational or functional standpoint may not be treated as themselves water-oriented. There may, for instance, be office space that directly serves the particular water-oriented uses taking place on the pier. Shipping lines using a particular pier, for instance, may need office space on the pier for the efficient conduct of their operations. Although one can perhaps speak of such office space as being "incidental" or "secondary", we think a sounder conceptual approach is simply to regard such use as itself "water-oriented".

---

4. Bay fill may be permitted if "necessary to the health, safety or welfare of the public in the entire bay area" (§ 66632, subd. (f)), or when "minor fill for improving shoreline appearance or public access to the bay" is involved (§ 66605, subd. (a)).

If we can answer any further questions on this subject, please do not hesitate to contact us.

Very truly yours,

JOHN K. VAN DE KAMP
Attorney General

DENNIS M. EAGAN
Deputy Attorney General

DME:mg

APPENDIX B
Summary by Pier

The following information is derived from the Port's pier inventory , the Special Area Plan, the Total Design Plan, and conclusions made in the analysis portion of the report.

Pier 1

Type of Member	Condition	Type of Design Loading	Permitted Uses on New or Replacement Fill from SAP	Site Specific Guidelines and Development Program from TDP	Fill Required
Concrete jacketed timber piles	Good	For vertical loads only; no seismic	Public recreation, commercial recreation, marina, and maritime	In the interim, permit 15,000 sq ft; for the long term, permit 160,000 sq ft for office use	Yes. Lateral resistance to earthquake forces must be added to accommodate the uses specified in the TDP.
Reinforced concrete deck	Good	For vertical loads only no seismic			

Pier Component	Year Designed	Year Constructed	Original Use	Changed Use (date)
Bulkhead wharf	1908	1909	Offices and restaurant	No change
Substructure	1928	1929	Breakbulk cargo	Parking garage (1965)
Pier shed	1929	1930	Breakbulk cargo	Parking garage (1965)
Bulkhead building	1929	1930	Offices and restaurant	No change

Pier 1 1/2

Type of Member	Condition	Type of Design Loading	Permitted Uses on New or Replacement Fill from SAP	Site Specific Guidelines and Development Program from TDP	Fill Required
Concrete piles Reinforced concrete deck	Poor Poor	For vertical loads only; no seismic For vertical loads only; no seismic	Public recreation, commercial recreation, marina, and maritime	Restore bulkhead building to its historical appearance for use as a museum and/or offices	Yes. Lateral resistance to earthquake forces must be added to accommodate the uses specified in the TDP.

Pier Component	Year Designed	Year Constructed	Original Use	Changed Use (date)
Substructure	1915	1916	Passenger waiting room	Offices (1959)
Shed and buildings	1916	1917	Passenger waiting room	Offices (1959))

Pier 3

Type of Member	Condition	Type of Design Loading	Permitted Uses on New or Replacement Fill from SAP	Site Specific Guidelines and Development Program from TDP	Fill Required
Concrete piles Reinforced concrete deck	Poor Poor	For vertical loads only; no seismic For vertical loads only no seismic	Public recreation, commercial recreation, marina, and maritime	If Pier 3 is used for open space, provide 16,000 –32,000 sq ft of community facilities with a 120,000 sq ft shed-like structure	Yes. Lateral resistance to earthquake forces must be added to accommodate the uses specified in the TDP.

Pier Component	Year Designed	Year Constructed	Original Use	Changed Use (date)
Substructure	1915	1916	Breakbulk cargo	Change and date unknown
Bulkhead building	1916	1917	Offices	No change

Pier 24

Type of Member	Condition	Type of Design Loading	Permitted Uses on New or Replacement Fill from SAP	Site Specific Guidelines and Development Program from TDP	Fill Required
Timber piles Timber deck	Condemned Condemned	For vertical loads only; no seismic For vertical loads only; no seismic	Public recreation, commercial recreation, marina, and maritime	Allow development for restaurant, commercial recreation/public assembly/ maritime, community facilities, interim ancillary parking	Yes. Lateral resistance to earthquake forces must be added to accommodate the uses specified in the TDP.

Pier Component	Year Designed	Year Constructed	Original Use	Changed Use (date)
Pier substructure	1912	1913	Breakbulk cargo	Passenger pier (date unknown)
Bulkhead building	1912	1913	Offices	No change
Connecting wharf	1934	1935	Warehouse	No change

Pier 33

Type of Member	Condition	Type of Design Loading	Permitted Uses on New or Replacement Fill from SAP	Site Specific Guidelines and Development Program from TDP	Fill Required
Concrete piles Reinforced concrete deck	Good Good	For vertical loads only; no seismic For vertical loads only; no seismic	Maritime, passenger terminal, and public access	N/A	Yes. Lateral resistance to earthquake forces must be added to accommodate a passenger terminal.

Pier Component	Year Designed	Year Constructed	Original Use	Changed Use (date)
Substructure	1916	1917	Breakbulk cargo	General rental (date unknown)
Pier shed & bulkhead bldg	1917	1918	Offices	No change
South bulkhead building	1982	1983	Offices and restaurant	No change

Pier 35

Type of Member	Condition	Type of Design Loading	Permitted Uses on New or Replacement Fill from SAP	Site Specific Guidelines and Development Program from TDP	Fill Required
Concrete piles & cylinders	Cracking & spalling	For vertical loads only; no seismic	Maritime, passenger terminal, and public access	N/A	Yes. If major renovations to the existing passenger terminal are proposed, lateral resistance to earthquake forces must be added.
Reinforced concrete deck	Cracking & spalling	For vertical loads only; no seismic			

Pier Component	Year Designed	Year Constructed	Original Use	Changed Use (date)
Pier substructure	1913	1914	Breakbulk cargo	Cruise ship terminal (19—)
Pier shed & bulkhead bldg	1914	1915	Offices and restaurant	No change

Pier 40

Type of Member	Condition	Type of Design Loading	Permitted Uses on New or Replacement Fill from SAP	Site Specific Guidelines and Development Program from TDP	Fill Required
Concrete cylinders	Fair	For vertical loads only; no seismic	Commercial recreation, public recreation, and marina	N/A	Yes. Lateral resistance to earthquake forces must be added to accommodate the commercial recreation use specified in the SAP.
Timber piles	Poor	For vertical loads only no seismic			
Timber deck	Poor	For vertical loads only; no seismic			
Concrete encased steel beams	Cracking & spalling	For vertical loads only no seismic			
Timber deck	Unknown	For vertical loads only no seismic			

Pier Component	Year Designed	Year Constructed	Original Use	Changed Use (date)
Pier 40	1907	1908	Breakbulk cargo	Ship repair (date unknown)
Bulkhead building between Piers 38 and 40	1908	1909	Unknown	No change
Pier 40 extension	1916	1917	Breakbulk cargo	Ship repair (date unknown)
Pier 40 alterations	1927	1928	Breakbulk cargo	Ship repair (date unknown)

Pier 45

Type of Member	Condition	Type of Design Loading	Permitted Uses on New or Replacement Fill from SAP	Site Specific Guidelines and Development Program from TDP	Fill Required
Concrete piles	Good	For vertical loads only; no seismic	Public access, boat slips, and maritime	N/A	Possibly. Although none of the uses allowed on new or replacement fill would require lateral resistance bracing, the uses of the earth-filled portion of the pier could require additional lateral resistance to earthquake forces.
Solid fill	Good	For vertical loads only; no seismic			
RR stringers & timber piles	Good	For vertical loads only; no seismic			
Concrete deck	Good	For vertical loads only; no seismic			
Timber deck	Unknown	For vertical loads only; no seismic			

Pier Component	Year Designed	Year Constructed	Original Use	Changed Use (date)
Pier substructure	1925	1926	Breakbulk cargo	Fish handling (date unknown)
Pier sheds	1927	1928	Breakbulk cargo	Fish handling (date unknown)

APPENDIX C

THE UNIFORM BUILDING CODES

The 1976 through 1985 Uniform Building Codes

The formula to determine the lateral resistance required, to be designed into a structure (in this case a pier), to withstand lateral earthquake forces was expressed by:

V (the total lateral force at the base) = ZIKCSW

where Z is the numerical coefficient for the San Francisco Bay area (Zone 4) as shown on the Seismic Zone Map of the United States,

where I is the occupancy importance factor for a pier,

where K is the horizontal force factor for a pier,

where C is a numerical coefficient dependent upon the Period,

where S is a numerical coefficient for site-structure resonance, and

where W is the total dead load plus 25 percent of the live load

The value of ZIK, for a pier in the Bay area, was equal to 1.0. The value of C did not need to exceed 0.12. The value of S was a minimum of 1.0 and a maximum of 1.5, therefore CS ranged in value between 0.12 and 0.18. The total lateral force V ranged between 12 and 18 percent of (the dead load plus 25 percent of the live load.)

The 1988 Uniform Building Code

The formula to determine the lateral resistance required, in the design of a pier, to withstand lateral earthquake forces was revised considerably in the

1988 Uniform Building Code. The lateral resistance required was increased and the horizontal force factor and the coefficient for site-structure resonance was replaced by a structure type factor. The formula to determine the lateral resistance required is expressed by:

V (the total lateral force at the base) = ZIC/Rw x W

where Z is the numerical coefficient for the San Francisco Bay area (Zone 4) as shown on the Seismic Zone Map of the United States,

where I is the occupancy importance factor for a pier

where C is a numerical coefficient dependent upon the Period and the site coefficient for soil characteristics,

where Rw is the structure type factor,and

where W is the total dead load plus 25 percent of the live load.

The value of ZI/Rw, for a pier in the Bay area, is equal to 0.10. The value of C does not need to exceed 2.75. The total lateral force V could be as much as, but does not need to exceed 27.5 percent of (the dead load plus 25 percent of the live load.)

APPENDIX D

THE ASSOCIATION OF AMERICAN STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO) CODE

The AASHTO Code for bridges is sometimes used for piers because piers act like bridges structurally. Usually the AASHTO and UBC codes are examined together and code with the highest value is used. The formula to determine the lateral resistance required is expressed by, either:

a. V (the total lateral force at the base) = ARS/Z x W

where ARS is derived graphically from an ARS Spectra chart and is a function of the peak ground acceleration and the period of the structure

where Z is derived graphically from an Adjustment for Ductility and Risk Assessment chart and is a function of the type of structure and the period of the structure.

The value of ARS is typically 1.0. The value of Z is 8.0 for a structure with well confined ductile multi-column bents or is 6.0 for a structure with well confined ductile single column bents. In this case, the total lateral force V ranges between 12.5 and 16.7 percent of (the dead load plus 25 percent of the live load.) Or the lateral resistance required is expressed by:

b. V (the total lateral force at the base) = CFW

where C is a function of peak ground acceleration, the period of the structure, and the depth to bedrock.

where F is a function of the type of structure, and

where W is the total dead load plus 25 percent of the live load

The value of F is typically 1.0, and the value of C is typically 0.15. In this case the total lateral force v = 15 percent (dead load plus 25 percent of the live load.)

APPENDIX E

SEISMIC FORMULA FOR LATERAL LOADING

From 1974 through 1986, the Engineering Criteria Review Board reviewed thirteen pier projects. For the purpose of determining what codes were used and what values of lateral load design resulted, these projects have been examined and are as follows.

Permit	Location	Codes Used	Lateral Design Load
04-74	Port of Oakland Berths 2, 3, and 4	UBC	V = 20% (Dead Load + 100 PSF Live Load + Weight of Cranes)
18-76	Crowley Plaza Pier 41	UBC (1979)	V = 15% (Dead Load + 100 PSF Live Load)
08-78	Port of Oakland Berth 5	Unknown	V = 20% (Structure Dead Load + Weight of Cranes)
18-78	Port of Richmond Terminal No. 2	UBC	V = 15% (Dead Load + 80 PSF Live Load)
15-79	Jensen & Reynolds Marine Terminal	UBC	V = 15% (Dead Load + 100 PSF Live Load)
17-79	Wickland Oil Terminals by Hallanger Engineers	UBC(1979)	V = 20% (Dead Load + 100 PSF Live Load)
22-79	Port of Richmond Terminal No. 3	UBC (1976)	V = 15% (Dead Load + 10% Uniform Live Load)
42-79	Harbor Carriers Pier 43-1/2	UBC (1975)	V = 15% (Dead Load + 100 PSF Live Load)
10-83	Port of Redwood City Wharf 4	UBC	V = 20% (Dead Load + 10% Live Load)

CN 3-84	Treasure Island Pier P-503	UBC & AASHTO	V = 16% (Dead Load + 100 PSF Live Load
03-84	Port of Redwood City Wharf 3	UBC (1979) & AASHTO	V = 28% (Dead Load + 10% Live Load)
24-86	Port of Oakland Carnation Terminal	UBC (1985) & AASHTO	V = 13% (Dead Load + 100 PSF Live Load)